DOCUMENT RESUME

ED 216 359 CS 206 873

AUTHOR Swiggett, Betty M.
TITLE A Study of the Relation of Syntactic Complexity to Mode of Discourse in the Writing of Eighth and Twelfth Graders.
PUB DATE 79
NOTE 34p.; Research prepared at New York University.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Age Differences; Comparative Analysis; *Creative Writing; Developmental Stages; *Expository Writing; Grade 8; Grade 12; Racial Differences; Secondary Education; *Socioeconomic Status; *Syntax; Writing Evaluation; Writing Processes; *Writing Research; Writing Skills
IDENTIFIERS Discourse Modes; *Syntactic Complexity

ABSTRACT

A study was conducted to (1) examine the relation of syntactic complexity to mode of discourse in the writing of eighth and twelfth grade students; (2) determine to what extent variations observed were related to grade level, socioeconomic status, and race; and (3) determine to what extent the syntactic complexity achieved on a rewriting task related to that observed in the written compositions. The subjects, 100 eighth grade and 100 twelfth grade students, were given two writing assignments--one in the transactional and one in the poetic mode--and one rewriting task, the Syntactic Maturity Test (SMT). The resulting compositions were segmented by T-units, words per clause, clauses per T-unit, participles per 100 T-units, and noun, adjective, and adverb clauses per 100 T-units. Results showed that although transactional writing was overall more syntactically complex than poetic writing, it was poetic writing that primarily reflected syntactic growth between grades eight and twelve. This growth was characterized by an increase in clause length, T-unit length, use of adjective clauses and participles, and by a decrease in the subordination ratio and use of noun and adverb clauses. There was some evidence that differences between socioeconomic groups increased with age, with students from lower socioeconomic levels performing poorer than their peers. The general trends that were observed were reflected in the rewritings of the SMT. (Materials used in the study are appended.) (FL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED216359

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☑ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

A STUDY OF THE RELATION OF SYNTACTIC COMPLEXITY TO MODE OF DISCOURSE IN THE WRITING OF EIGHTH AND TWELFTH GRADERS

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Betty M. Swiggett

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Betty M. Swiggett

Hampton City Schools

1819 Nickerson Blvd.

Hampton, Virginia 23663

CS206873

Table of Contents

	Page
Purposes of the study	1
Theoretical Framework	1
Methodology	2
Study participants	2
Tasks	3
Data collection procedures	4
Segmentation and scoring	5
Data Analysis	6
Findings	6
Measures of syntactic complexity, modes of discourse and writer characteristics	7
Syntactic complexity and categories of informative writing	11
The Syntactic Maturity Test and writing	15
Discussion	18
Mode and grade	18
Socioeconomic status	19
Race	20
Syntactic Maturity Test and writing	20
Implications for educational practice and research	21
References	26
Appendix A. Writing about a short story	28
Appendix B. Writing about a personal experience	29
Appendix C. "Aluminum"	30

List of Tables

Page

Table

1. Mean scores and standard deviations on seven measures of syntactic complexity in grade by mode cells — 8
2. Frequency of scripts by categories of informative writing, transactional mode — 13
3. Correlation between the Syntactic Maturity Test and writing by mode and across modes — 17

List of Figures

Figure

1. Significant interaction between race and socioeconomic status on mean words per T-unit — 10
2. Main effects on clause length — 11
3. Significant interaction between categories of informative writing and grade on participles per 100 T-units — 14

Purposes of the Study

The purposes of this study were (1) to examine the relation of syntactic complexity to mode of discourse in the writing of eighth and twelfth graders; (2) to determine to what extent variations observed were related to grade level, socioeconomic status and race, and (3) to determine to what extent the syntactic complexity achieved on a "rewriting" task, the Syntactic Maturity Test, related to that observed in the written compositions, both by mode and across modes.

Theoretical Framework

The theoretical bases of this study include Hunt's (1965, 1970) theory of syntactic maturity, discourse modes developed by Britton and colleagues (Britton, Burgess, Martin, McLeod, & Rosen, 1975), the composing processes described by Emig (1971), theories of cognitive growth developed by Piaget (1932) and Vygotsky (1934/1962), and linguistic code variations described by Bernstein (1972) and Labov (1969).

In brief, Hunt has provided current writing research a basic syntactic unit, the "minimal terminable unit," or "T-unit," for use in the systematic investigation of syntactic growth. The T-unit is defined by Hunt as "one main clause plus any subordinate clause or nonclausal structure that is attached to or embedded in it" (1970, p. 4). Studying several syntactic measures, Hunt (1965) found mean T-unit length to be the best definer of syntactic growth across age levels. Moreover, he demonstrated in subsequent research (1970) that the Syntactic Maturity Test (SMT) was an economical, efficient instrument for charting syntactic development from grade 4 to adulthood. Certain researchers, utilizing Hunt's "norms" and theory of syntactic development, have criticized his apparent global view of writing and have identified a need for norms which

differentiate among modes of discourse. There is also a need to establish norms which reflect, in addition to modal differences, the social and cultural pluralism of American society. Moreover, as new paradigms of discourse modes are developed and measures of syntactic complexity are applied to them, the T-unit and related measures can demonstrate their stability or undergo further refinement.

Methodology

Study Participants

Study participants were 100 eighth graders and 100 twelfth graders enrolled in a public school system in Tidewater, Virginia. Participants were chosen from all eleven secondary schools in the district by means of a stratified random sampling according to grade, sex, and race. The proportions by race and sex were, respectively, 60 white subjects and 40 black subjects with equal numbers by sex at grade 8 and 66 white subjects and 34 black subjects with equal numbers by sex at grade 12. Foreign born students and those with learning disabilities related to language development were excluded from the sample. A computer program which used a multistage procedure of course selection, teacher selection, and subject selection was employed to fill the quotas. The random process of selection continued, moreover, until study participants met the following additional stipulations: (1) they completed all three tasks; (2) they wrote compositions in the anticipated mode; and (3) they achieved a length per mode of 150 words or more. Six black males with a slight shortage of words on one composition were retained when no replacements were available. This procedure produced a broad sampling of the eighth and twelfth grade populations. Subjects were drawn from 71 classes with 15 different course titles.

The mean age of eighth graders was 14 years, with 94 of the 100

students being ages 13-14. The range was 12 years, 8 months to 15 years, 6 months. The mean age of twelfth graders was 17 years, 10 months, with 96 of the students being ages 17-18. The range was 16 years, 6 months to 19 years, 1 month. Socioeconomic status was based on the occupational ranks of both parents, using the Minnesota Scale for Paternal Occupations to form three levels: upper middle class (I-II), lower middle class (III-IV), and lower class (V-VII). The socioeconomic distribution on grade eight was 31 upper middle class subjects, 45 lower middle class subjects, and 24 lower class subjects; the distribution on grade twelve was 40 upper middle class subjects, 38 lower class subjects, and 22 lower class subjects.

Tasks

During February-March, 1979, students were given two writing tasks—one in the transactional mode and one in the poetic mode--and one rewriting task, the Syntactic Maturity Test (SMT). Transactional writing as defined in Britton's paradigm is writing to inform, to persuade—that is, writing to get things done. Poetic writing is defined as writing shaped into a work of art, the poem, the story, the autobiography. The instructions and prewriting stimuli used for the study provided controlled stimulus situations so that writing samples by mode could be obtained without advance preparation by the students.

The stimulus for transactional writing was a short-short story, "Birthday Party," by Katharine Brush (1946) with two follow-up discussion topics. Following the reading of the story, which was presented orally by the teacher as the student followed the text, the student was asked to write a composition in which he discussed the personalities of the husband and wife as they shed light on the clash, and then he was asked to predict

what the relationship of the couple would be five years hence. The suggested time for completion of this task was two class periods. (A description of this task is presented in Appendix A, "Writing about a Short Story.")

The writing task in the poetic mode was an autobiographical piece, the goal being the shaping of a personal experience into a literary form. The stimulus for writing was a series of six questions about significant events in the subject's life. The questions were an adaptation of a prewriting strategy suggested by Koch and Brasil (1978, pp. 40-43). Each question was simple and direct, designed specifically to "prime the pump" of the student's memory and imagination. To allow the student ample time for planning, writing, and revisions, the suggested time for completion of this task was three class periods. (A description of the task is presented in Appendix B, "Writing about a Personal Experience.")

A third task for students was the taking of the Syntactic Maturity Test (SMT), a rewriting exercise. A passage of 32 kernel sentences on the topic of aluminum, the SMT is tightly controlled for content with the purpose of making the only difference that of the syntactic structures chosen by the writer. This task required approximately one class period for completion. (See Appendix C for a copy of this task.)

Data Collection Procedures

The investigator held orientation sessions with the thirty-two teachers involved in the study to explain the purposes and procedures of the study. Each teacher received a packet of materials which included (a) a schedule for administering tasks, (b) guidelines for administering tasks, and (c) student handouts for each of the three tasks. To ensure full familiarity of the teachers with the tasks and the procedures for

administering them, the investigator took the teachers through the steps in abbreviated form.

To counterbalance any learning effects that one task might have on the following task, the subjects were divided into three groups by schools with the tasks assigned in a different order for each group. To create as nearly as possible a normal classroom situation, the classroom teachers incorporated the writing tasks into their instructional program. Students were not told that their compositions would be singled out for analysis.

Segmentation and Scoring

Segmentation of T-units followed the methodology established by Hunt (1965, p. 6) and O'Hare (1973, pp. 47-48), except that the procedure for word count was more stringent than that of O'Hare. In the present study, contractions and two-part hyphenated words were counted as one word rather than two. The investigator and one assistant did the segmentation, frequency counts, and scoring of all scripts.[1] Seven ratios were computed for each script: words per T-unit, words per clause, clauses per T-unit, noun clauses per 100 T-units, adjective clauses per 100 T-units, adverb clauses per 100 T-units, and participles per 100 T-units.

Reliability of scoring. Consistency of scoring was determined by the investigator rescoring 10% of the scripts analyzed by herself and the assistant. Pearson product-moment correlation coefficients, calculated for each measure by task, ranged from .91 to 1.00. Inter-rater reliability was checked by submitting 10% of the scripts with an equal

---

[1]Appreciation is expressed to Old Dominion University for providing the funding for an assistant through its Non-study Work Program.

number from each scorer to a third person. Pearson product-moment correlation coefficients, calculated for each measure by task, had a range from .89 to 1.00. All errors detected in scoring were corrected.

Data Analysis

The statistical design used to test the relationships under study in writing by mode was a separate analysis of variance for each syntactic measure in a 2(mode) X 2(grade) X 3(SES) X 2(race) mixed design with repeated measures on the first factor. Because the inclusion of the socioeconomic factor produced unequal cell sizes, the multiple regression procedure for analysis of variance was used. This procedure made the problem of unequal cell sizes virtually negligible. The derived F values were tested for significance at the .05 level. The Newman Keuls test and the Scheffé test were used to make comparisons among means when the F test indicated a significant difference existed.

Similarly, for the rewritings of the SMT, scores on each dependent measure except the noun clause ratio were analyzed by a separate analysis of variance using a 2(grade) X 3(SES) X 2(race) design. The SMT elicited no noun clauses in Hunt's study (1970). The purpose of this analysis was to determine whether significant group differences in performance were similar to those found in the modal analysis. In addition to determining if the SMT varied from the modal analysis for significance group differences, a correlation study by grade level and across grade levels of the relation of performance on the SMT to writing was made. Correlations were tested for significance at the .05 level.

Findings

Findings will be discussed under three major headings; (a) Measures of syntactic complexity, modes of discourse, and writer characteristics,

(b) Syntactic complexity and categories of informative writing, and (c) The Syntactic Maturity Test and writing.

Measures of Syntactic Complexity, Modes of Discourse and Writer Characteristics

The average lengths of writing samples in grade by mode cells were 246 words and 249 words respectively for transactional writing and poetic writing at grade 8 and 280 words and 344 words respectively for transactional writing and poetic writing at grade 12.

Mode. Compositions in the transactional mode were more syntactically complex than those in the poetic mode. As illustrated in Table 1, mode exerted a significant main effect at the .05 level and beyond on all seven measures of syntactic complexity. All ratios but the participial ratio were higher in transactional writing. Participles were more frequent in poetic writing. Contrasts by mode were greater at grade 8 than grade 12. The Scheffé procedure revealed that significant differences at the .05 level occurred at grade 8 with all syntactic complexity measures except for the participial ratio. At grade 12 significant differences occurred only with words per T-unit and words per clause (Table 1).

Grade. When transactional and poetic writing were combined to constitute grade level writing samples, all syntactic complexity measures with the exception of the subordination ratio varied at the .05 level of significance or beyond with grade level. Significant main effects exerted by grade on six syntactic measures were as follows: on words per T-unit, F (1, 376) = 13.86, $p < .001$; on words per clause, F (1, 376) = 46.80, $p < .001$; on noun clauses per 100 T-units, F (1, 376) = 9.20, $p < .01$; on adjective clauses per 100 T-units, F (1, 376) = 11.72, $p < .001$; on adverb clauses per 100 T-units, F (1, 376) = 4.28, $p < .05$, and on participles

TABLE 1

Mean Scores and Standard Deviations on Seven Measures of Syntactic Complexity in Grade by Mode Cells

Measure	Grade	Mode				F
		Transactional		Poetic		
		Mean	S.D.	Mean	S.D.	
Words/ T-unit	8	13.17_a	2.83	10.97_b	2.49	37.40
	12	13.75_a	2.91	12.50_c	3.22	
Words/ Clause	8	7.64_d	1.18	7.24_f	1.04	12.01
	12	8.56_e	1.38	8.07_g	1.60	
Clause/ T-unit	8	1.73_h	.33	1.52_j	.27	23.72
	12	1.61_i	.26	1.55_{ij}	.26	
Noun Clauses/ 100 T-units	8	28.82_k	18.79	20.42_l	15.86	14.76
	12	21.67_l	12.80	18.18_l	13.72	
Adjective Clauses/ 100 T-units	8	12.89_m	12.02	8.97_n	7.91	8.86
	12	15.78_m	11.66	13.37_m	10.09	
Adverb Clauses/ 100 T-units	8	31.91_o	16.47	22.23_p	15.40	9.91
	12	23.90_p	15.16	23.79_p	15.48	
Participles/ 100 T-units	8	4.94_q	7.45	6.40_q	7.55	4.21
	12	7.67_{qr}	8.49	10.27_r	14.42	

Cell means sharing a common subscript are not significantly different.
$F(1, 376) = 3.89$ at .05

per 100 T-units, F (1, 376) = 11.13, $p < .001$. Scores on these measures increased with grade level except for the noun clause and adverb clause ratios, where the greater frequencies occurred at grade eight.

Significant interactions between grade and mode occurred on the subordination ratio, F (1, 376) = 8.15, $p < .01$, and the adverb clause ratio, F (1, 376) = 9.46, $p < .01$. Eighth graders showed a sharp contrast in performance, with markedly higher scores on these two measures when writing in the transactional mode. For twelfth graders the subordination ratio and the adverb clause ratio were stable across modes (Table 1).

Socioeconomic status. In modal-based writing, significant main effects occurred for socioeconomic status on words per T-unit, F (2, 376) = 6.86, $p < .01$, words per clause, F (2, 376) = 6.43, $p < .01$, and the participial ratio, F (2, 376) = 4.11, $p < .05$. With the T-unit, there was a significant interaction between socioeconomic status and race, F (2, 376) = 4.73, $p < .01$. The Scheffé procedure showed that mean T-unit length discriminated between upper middle class black subjects and lower black subjects. No significant differences occurred for white subjects (Figure 1). Scheffé tests revealed that mean clause length discriminated among all three socioeconomic groups (Figure 2). The participial ratio discriminated between upper middle class subjects and lower class subjects.

Race. The only syntactic complexity measure to vary with race was mean clause length, F (1, 376) = 9.85, $p < .01$, with a longer clause length being achieved by white subjects (Figure 2). Nevertheless, upper middle class black twelfth graders scored higher on mean clause length than all other subgroups. Their average clause length was 8.99 words, whereas white twelfth graders of the same socioeconomic status achieved an average clause length of 8.69 words.

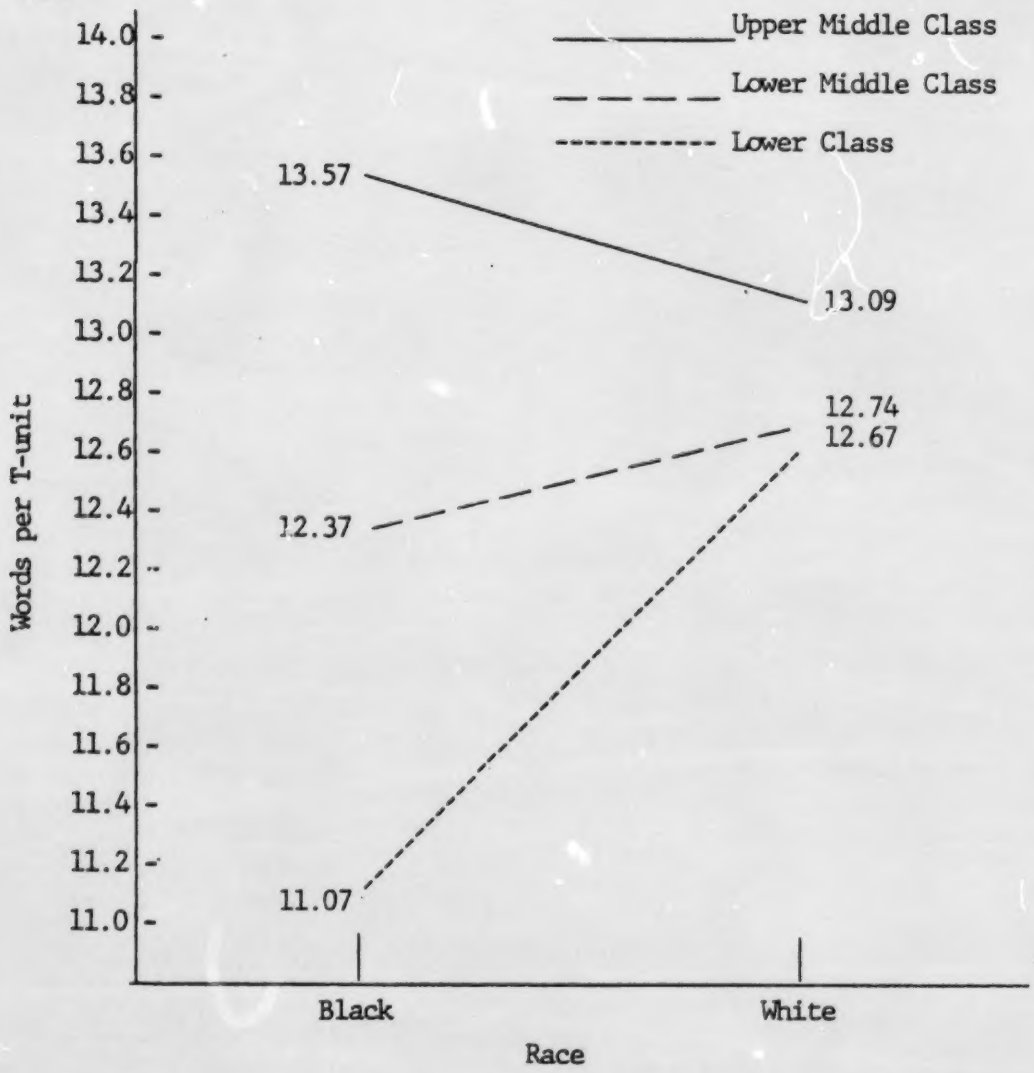

Figure 1. Significant Interaction between Race and Socioeconomic Status on Mean Words per T-unit

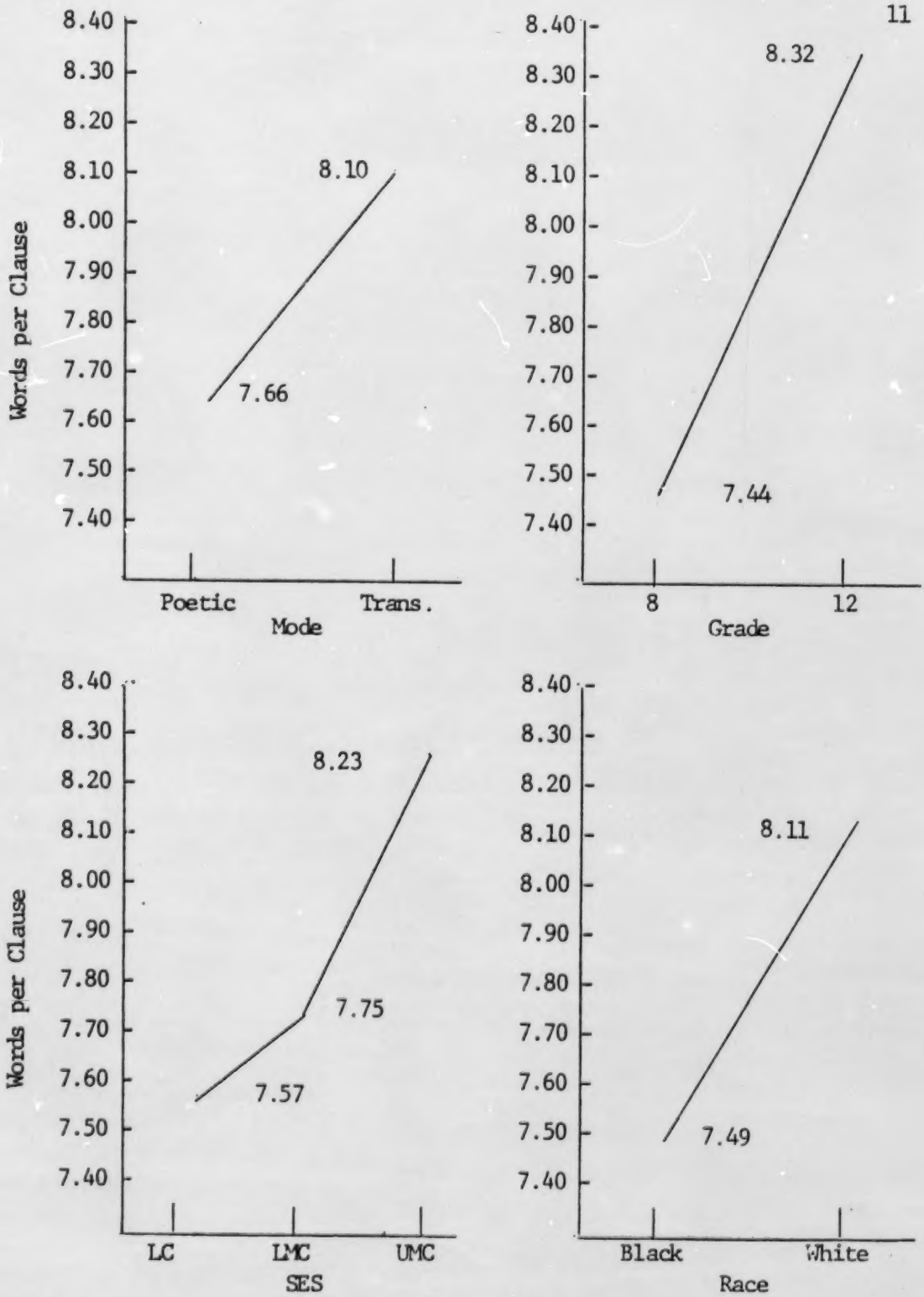

Figure 2. Main Effects on Clause Length

Clause length was clearly the most sensitive measure of syntactic complexity in writing for the subjects in this study. The variables of mode, grade, socioeconomic status, and race operated in an additive manner to increase mean clause length (Figure 2).

Although higher scores occurred with transactional writing on all syntactic complexity measures, except the participial ratio, poetic writing was a better indicator of growth between grade levels. The increase in mean clause length between the grades stemmed equally from poetic and transactional writing. However, the higher scores in mean T-unit length and the frequency of adjective clauses and participles at grade 12 were produced primarily by the increases on these ratios in poetic writing. These four indices, according to Hunt, are the chief indicators of a mature style.

Syntactic Complexity and Categories of Informative Writing

The categories of the transactional mode, as devised by Britton and his associates (1975), include subcategories of informative writing according to levels of abstraction, progressing from recording and reporting to speculative and tautologic. The task assigned in the transactional mode in this study was designed to elicit writing at the speculative level. When scripts were analyzed, it was clear that some scripts fell into the lower categories. This situation established the basis for a secondary finding of this study—one which addressed the question: Does syntactic complexity vary with categories of informative writing?

Scripts were classified according to levels recommended for writing based on interpreting a literary passage (Britton, et al., pp. 101-102). Three categories were chosen as appropriate: (a) reporting, (b) analogic, i.e., making statements in support of a classificatory generalization, and

(c) speculative, i.e., making observations growing out of previous generalizations. Frequencies of scripts by categories are presented in Table 2.

Table 2

Frequency of Scripts by Categories of Informative Writing, Transactional Mode

	Category		
Grade	Reporting	Analogic	Speculative
8	3	40	57
12	3	32	65

Because the small frequencies in the reporting category were unsuited to statistical analysis, the first two categories were combined, producing a dichotomous grouping on each grade level. Means and standard deviations were computed for each syntactic measure according to these two categories. When the data was subjected to analysis of variance, only the participial ratio showed a significant difference by category, F (1, 196) = 5.62, $p < .05$. However, as Figure 3 illustrates, this index was involved in a significant interaction effect. On the eighth grade level, the frequency of participles per 100 T-units for writing in the speculative category was 6.00 versus 3.53 for the other categories in combination. At grade twelve the difference favored the lower categories with a score per 100 T-units of 9.76 versus 6.55 for the speculative category. Although these findings may be insufficient to make generalizations beyond the sample under study, the failure to find a relationship between these categories

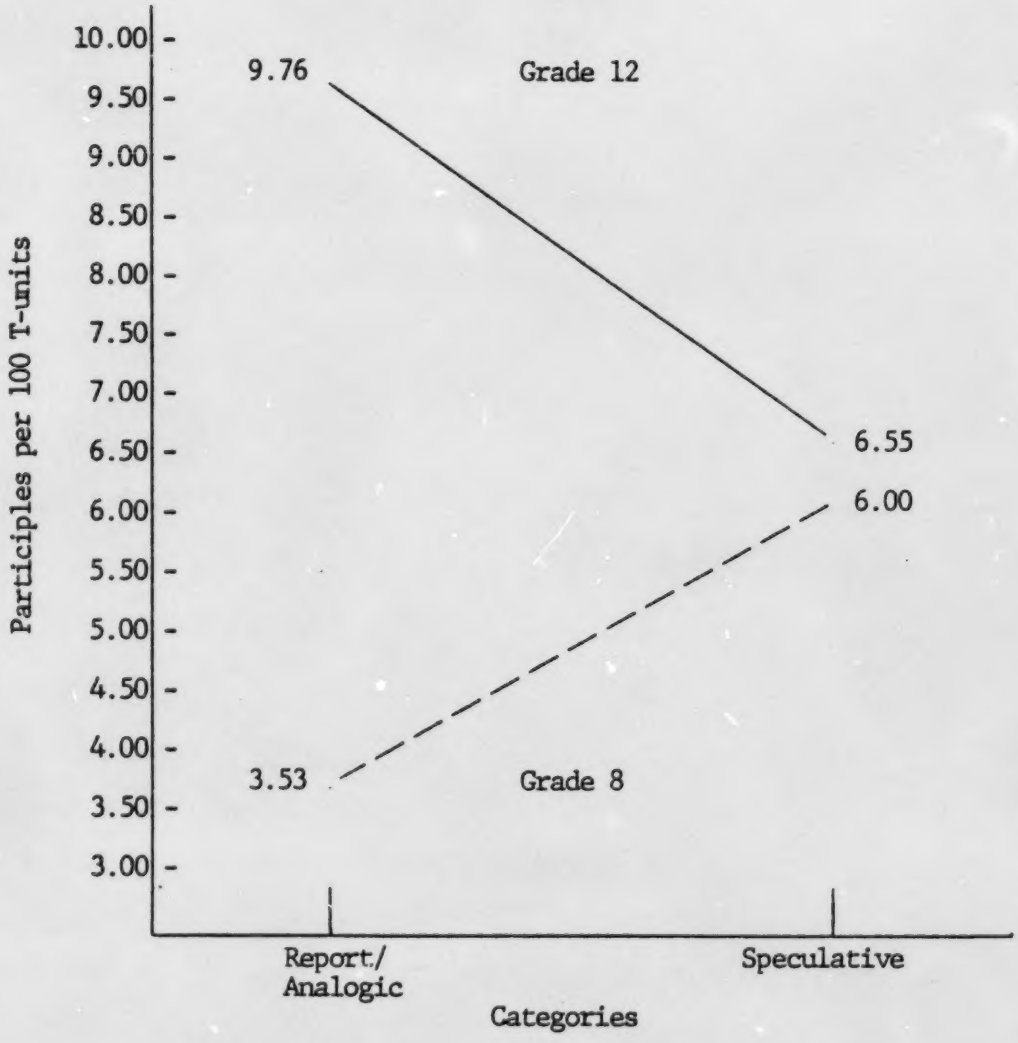

Figure 3. Significant Interaction between Categories of Informative Writing and Grade on Participles per 100 T-units

and syntactic complexity suggests that logical reasoning and elaboration of sentence structures are not necessarily related.

Syntactic Maturity Test and Writing

The findings based on a separate analysis of variance for each syntactic measure applied to the rewritings of the SMT tended to support the findings obtained from modal-based writing. Significant differences occurred with three measures: words per T-unit, words per clause, and participles per 100 T-units. Grade level differences on these three ratios were at the same level of significance ($p < .001$) and in the same direction for the SMT rewritings as occurred in modal-based writing.

Contrasts by socioeconomic status on the SMT rewritings were at the .001 level of confidence for both clause length and the participial ratio compared with the .01 and .05 levels for these measures respectively in writing. Moreover, with the participial ratio Scheffé pairwise comparisons indicated that upper middle class subjects outperformed both lower middle class and lower class subjects in contrast to outperforming only lower class subjects on this ratio in writing. Differences by race favoring white subjects occurred on T-unit length ($p < .01$) and clause length ($p < .001$) in contrast to occurring only with clause length ($p < .01$) in writing. No interactions occurred.

The number of noun clauses produced on the SMT was insufficient to make comparisons with those generated in writing. Based on his research using the SMT, Hunt (1970) reported that no child or skilled adult produced one noun clause. He concluded, "Surely it can only be that the subject matter, as expressed in these kernels, was not conducive to the production of noun clauses" (p. 32). Of the 200 subjects in the present

study, four produced a noun clause. Serving a total of three different functions, these noun clauses appeared in the following sentences:

Then what is left is in a liquid. (subject of sentence)

The process they use is they put it in pressure tanks. (predicate nominative)

Workmen extract these other substances and grind what is left of the bauxite. (direct object)

What remains is a mass of substances and liquid which is filtered. (subject of sentence)

It appears that the students who produced these few sentences containing noun clauses were governed not so much by structural cues as by a need to find a structure to embed an idea. In doing so, they turned to the noun clause.

Table 3 presents the correlations between the SMT and writing. An inspection of the data shows very quickly that correlations with the SMT are stronger for transactional writing than for poetic, and for twelfth graders than for eighth graders. All correlation coefficients are positive, but only two are in the moderate range: .425 on T-unit length for twelfth grade transactional writing, and .426 on clause length for total transactional writing. Although moderately weak, the correlations of .342 and .349 on clause length in transactional writing for grades eight and twelve respectively are the only ones which serve both grade levels equally well. As Table 3 shows, numerous other correlations are significant but they are moderately weak or weak. Nothing is gained, moreover, in the multiple correlations of the SMT with total writing over the simple correlations with transactional writing.

The question arises: Are the correlations obtained in this study

Table 3

Correlation between the Syntactic Maturity Test and Writing by Mode and across Modes

Measure[a]	Grade	Correlations between SMT and Transactional Writing	Poetic Writing	Total Writing
Words/T-unit	8	.241*	.200*	.204**
	12	.425***	.355***	.380***
	All	.346***	.343***	.330***
Words/Clause	8	.342***	.271**	.303***
	12	.349***	.159	.243***
	All	.426***	.280***	.347***
Clauses/T-unit	8	.097	.61	.118
	12	.160	.044	.101
	All	.092	.117*	.101*
Adjective Clauses/ 100 T-units	8	.329***	.228*	.278***
	12	.105	.170	.134
	All	.236***	.216**	.223***
Adverb Clauses/ 100 T-units	8	.208*	.195	.193**
	12	.207	.061	.133
	All	.188*	.132	.159**
Participles/ 100 T-units	8	.252*	.001	.125
	12	.150	.089	.108
	All	.222**	.109	.152

[a]The noun clause ratio is omitted because the SMT was designed to avoid this syntactic structure.

*$p < .05$
**$p < .01$
***$p < .001$

high enough to suggest that the SMT is more than simply one instrument for one context? Some insight can be gained by comparing these correlations between the SMT and writing with correlations between modes. When transactional writing is correlated with poetic writing, the correlations on T-unit length are slightly higher than those between writing and the SMT; (grade 8, .281, $p < .05$; grade 12, .466, $p < .001$; total, 3.95, $p < ,001$). those on clause length decidedly lower (grade 8, .187, n.s.; grade 12, .272, $p < .01$; total, .316, $p < .001$). The correlation coefficient of .466 for T-unit length at grade twelve between transactional and poetic writing is higher than the correlation coefficients on any measure of writing with the SMT.

Discussion

Mode and Grade

Although transactional writing was overall more syntactically complex than poetic writing, it was poetic writing which primarily reflected syntactic growth between grades 8 and 12. In transactional writing eighth graders used noun and adverb clauses extensively to develop their ideas, causing an inflation of the subordination ratio. This ratio, in turn, increased mean T-unit length at grade 8 so that only a slight nonsignificant difference in mean T-unit length occurred between grades 8 and 12 in transactional writing. Mean clause length turned out to be the most stable index of syntactic growth between grades 8 and 12 even though it too varied with mode.

These findings on variation by mode highlight the need for a reassessment of data based on "free writing," i.e., writing controlled in no way by the researcher and usually described as whatever is typical of the specific grade level studied. In Hunt's (1965) study based on "free writing," mean T-unit length for eighth graders of average ability was

11.5 words versus 14.4 words for twelfth graders of average ability. In a replication of Hunt's study conducted by Blount, et al. (1968), one restriction was placed on the writing samples: the avoidance of topics which produce a large amount of dialogue. Their study revealed that mean T-unit length for eighth graders of average ability was 12.8 words versus 14.4 words for twelfth graders of average ability. In the present study, the contrasts by mode were as great as the contrast by grade in the study of Blount, et al. Eighth graders obtained a mean T-unit length of 10.97 words in poetic writing versus 13.17 words in transactional writing. Twelfth graders achieved a mean T-unit length of 12.50 words in poetic writing compared with 13.75 in transactional writing.

Traditionally students do more narrative writing at grade 8 than at grade 12. Because of this trend, it is reasonable to conclude that free writing samples, such as those of Hunt and of Blount, et al., included different proportions of writing by mode at grade 8 than occurred at grade 12. The effect of such modal disparities on syntactic complexity scores is to produce a greater difference by grade level than would be achieved if mode had been controlled. Data derived from normative studies which control for mode of discourse are less ambiguous and therefore more useful than those based on free writing.

Socioeconomic Status

The findings of this study indicate that socioeconomic status is a contributing factor, along with mode and grade, to differences in language development. This finding is in accord with the studies of McCarthy (1930), Bernstein (1972), Bruner, et al. (1966), and Lawton (1968). They trace the source of the variation in language to the emphasis given to elaboration and to abstract reasoning in the child's cultural and family setting.

There is some evidence to support Lawton's (1968) finding that differences between socioeconomic groups increase with age. Differences were greater at grade 12 than at grade 8. Contrasts on T-unit length for the upper middle class versus the lower class increased from .75 words to 1.99 words. For clause length the contrast increased from .28 words to .86 words, and for the participial ratio the contrast increased from 2.91 words to 4.5 words. This increase in differences may result from differences in career goal. Loban (1976) comments on the surge in syntactic development that occurred between grades 11 and 12 in the High and Random groups in his study but not in the Low group. He suggests the impetus for development in the first two groups comes from an anticipation of a college education. Obviously such expectations affect not only students but teachers and society as well.

Race

The only significant difference attributed to race alone was in mean clause length ($p < .01$). White subjects wrote clauses with an average length of 8.11 words compared with an average length of 7.59 words by black subjects. Because black subjects used subordinate clauses with a slightly greater frequency than white subjects, the mean difference in clause length was insufficient to make a significant difference in mean T-unit length for the two groups. Moreover, the difference on clause length by race did not increase from grade 8 to grade 12, the difference being .6 words at grade 8 and .5 words at grade 12.

Syntactic Maturity Test and Writing

In rewriting the SMT, the subject is given numerous opportunities to reduce kernel sentences to adjectival structures--clauses, phrases, and single words. Adverbial constructions are encouraged to a lesser extent,

and noun clauses rarely appear. The effect on the sample under study was to concentrate significant differences by grade level, socioeconomic status, and race in the expansion of clause length through various subordinating and embedding strategies, including the use of participles, either singly or in phrases. In other words, the weight of syntactic complexity shifted toward those structures which were characteristic of older subjects.

Even with the controls exercised by the SMT, the general trends observed in modal-based writing were reflected in the rewritings of the SMT. The analysis of variance indicated an increase in level of confidence from the .01 to .001 level with regard to socioeconomic status differences on words per clause and the participial ratio. Contrasts by race were reflected in T-unit length as well as clause length in contrast to being significant only for clause length in modal-based writing. This difference can be traced partly to the controls placed by the SMT on the subordination ratio. More subtle influences on differences in performance by race may stem from the test-like nature of the SMT and the technical nature of the process to be described. The fact that no interactions among variables occurred speaks well for the instrument.

The purpose of the correlation study was to determine the validity of the SMT as an indicator of writing performance. Validity coefficients tend to fall within the .40-.60 range with a median value of .50. The correlation of scores on the SMT with those of writing by mode fell within this band only twice: .425 for words per T-unit in transactional writing on grade 12, and .426 for words per clause in transactional writing for the total sample (see Table 3).

If the SMT is viewed as a predictor and writing in the transactional

mode at grade 12 is considered the criterion, the predictive efficiency of the validity coefficient of .425 on T-unit length can be computed using the formula: $\underline{E} = (1 - \underline{k})\ 100$. The first step is to solve for $\underline{k}$, using the formula: $\underline{k} - \sqrt{1 - \underline{r}^2}$. The $\underline{k}$ statistic is .91. By entering this figure into the formula $\underline{E} = (1 - \underline{k})\ 100$, the predictive efficiency is 9%.

Thus, with a validity coefficient of .425 on T-unit length, the predictive ability is 9% better than it would have been if there had been no relationship between the SMT and writing in the transactional mode on grade 12. Since the correlation coefficient of .466 between transactional writing and poetic writing on T-unit length on grade 12 was slightly higher, the predictive efficiency from one mode to another, using the same formulas, is 12%. The conclusion must be that neither the SMT nor an essay in poetic mode is adequate for the prediction of performance in the transactional mode or vice versa.

Implications for Educational Practice and Research

The first implication of the study stems from the finding that syntactic development between grades 8 and 12 is characterized by an increase in certain structures--clause length, T-unit length, adjective clauses, and participles--and by a decrease in others--the subordination ratio, noun clauses, and adverb clauses. To measure the syntactic development of older students, both clause length and T-unit length should be examined. The first measure is highly sensitive to changes by mode, grade, socioeconomic status, and race. The second measure, because of the contribution of the subordination ratio to its length, allows for differences which may be attributed partly to grade, partly to ethnic code, and partly to individual traits. Changes which are characteristic

of older students, however, can happen with younger students when they discuss their first drafts with classmates and adults and make revisions growing out of these discussions. Furthermore, it seems that with the junior high level student assignments to rewrite one's own essays retaining all the information but deleting one-fourth to one-half of the words would stimulate a fuller awareness of syntactic choices that otherwise might develop at a later age.

The second implication concerns the value of a multimodal approach to writing. In this study, it was evident that the two major modes made different syntactic, organizational, and cognitive demands on students. From a developmental perspective, the poetic mode precedes the transactional mode. Moffett (1968) points out the dependence of inexperienced writers on the narrative form to convey ideas that more mature writers would express at higher levels of abstraction. Because of this developmental trend, there is a widespread belief that the process of maturation involves a shift from storytelling and fantasy to realism. Instruction on the secondary level tends to reflect this belief through the increasing emphasis given to transactional writing during the senior high school years. In "Toward a Poetic of Fiction," Barbara Hardy (1968) contests this view. She describes storytelling as a primary act of the mind, one of our major tools for making life manageable. The finding that higher syntactic complexity scores are achieved in transactional writing should not be interpreted as support for a unimodal focus in the higher grades. The gains in poetic mode scores from grade 8 to grade 12 show that progress can continue in this mode--that there is no need to switch from poetic to transactional writing to achieve more syntactically complex writing.

A third implication concerns modal paradigms. Multi-based norms

must be pegged to a taxonomy of writing which takes into account both categories for writing and a developmental sequence in the differentiation and use of major types of writing. Main categories for modal paradigms, whether traditional or more recent, provide a wide net for classifying writing. Moreover, research has demonstrated that the separation between descriptive and narrative modes is so blurred that these categories ought to be classified as one mode. The current dependence on broad categories for classifying writing creates a basis for discrepancies in modal studies that might not otherwise exist. The modal paradigm developed by Britton and his associates offers the advantages of both simplicity and completeness in the classification of writing.

The fourth implication concerns the nature of the writing tasks. On six of the measures of syntactic complexity, the eighth graders equalled or exceeded statistically the performance of twelfth graders in transactional writing. Twelfth graders excelled on mean clause length only in transactional writing. One eighth grade teacher reported that at first he was apprehensive regarding his students' ability to handle the task in the transactional mode but that he found them more at ease with this task than the one in the poetic mode, which was based on a personal experience.

Why were these eighth graders more at ease with the task that generated the higher syntactic complexity scores? The primary difference lay in the construction of the task. The one in the transactional mode was sufficiently structured to give students a clear beginning and an ending point. The challenge was primarily problem-solving, which students fell to with a will, even though 43% of these eighth graders did not

achieve a speculative level.

With the task in the poetic mode, the difficulty lay in the generation of ideas and in the making of choices regarding appropriate experiences, organizational patterns, and details. The transactional task required a response to material at hand; the poetic a search into the past for subject matter. The latter is usually more time consuming and entails more fresh starts than the former.

Several findings regarding the Syntactic Maturity Test have implications for research. In the present study, the correlations between the SMT and writing were moderate to weak with correlation coefficients higher for transactional writing than for poetic writing. The SMT is especially useful, however, in studying the expansion of nominals through the reduction of kernel sentences to adjective clauses and single word modifiers. Eighth graders make these reductions, but twelfth graders do so more often.

In at least one case, the SMT demonstrates the relation between vocabulary and language proficiency. Many of the less skilled writers had difficulty with kernel sentence 15, "They use filters," because they apparently did not understand the concept of filtering and the content did not provide an explanation. Thus, they retained the kernel sentence or produced illogical sentences. In general, the scientific nature of the content gives a slight advantage to older subjects.

In conclusion, educators and researchers should be fully aware of the limitations of measures and instruments of syntactic complexity to trace growth in writing abilities, particularly the variations that may occur related to mode, grade and mode interactions, and socioeconomic status.

References

Bernstein, B. Social class, language, and socialization. In P. P. Giglioli (Ed.), Language and social context. New York: Penguin Books, 1972.

Blount, N. S., Johnson, S. L., & Fredrick, W. C. A comparison of the writing of eighth- and twelfth-grade students (Technical Report No. 73). Madison, Wis.: University of Wisconsin, 1968. (ERIC Document Reproduction Service No. ED 035 652)

Britton, J., Burgess, T., Martin, N., McLeod, A., & Rosen, H. The development of writing abilities (11-18). London: Macmillan Education, 1975.

Bruner, J. S., Olver, R. R., & Greenfield, P. M. Studies in cognitive growth. New York: John Wiley & Sons, 1966.

Brush, K. Birthday party. The New Yorker, March 16, 1946, p. 54

Emig, J. A. The composing processes of twelfth graders (NCTE Research Report No. 13). Urbana, Ill.: National Council of Teachers of English, 1971.

Hardy, B. Towards a poetics of fiction: An approach through narrative. Novel: A Forum on Fiction, 1968, 2, 5-14.

Hunt, K. W. Grammatical structures written at three grade levels (NCTE Research Report No. 3). Champaign, Ill.: National Council of Teachers of English, 1965.

Hunt, K. W. Syntactic maturity in schoolchildren and adults. Monographs of the Society for Research in Child Development, 1970, 35(3, Serial No. 134).

Koch, C., & Brazil, J. M. Strategies for teaching the composition process. Urbana, Ill.: National Council of Teachers of English, 1978.

Labov, W. The study of nonstandard English (Revised and enlarged edition of the monograph published by the Center for Applied Linguistics, Washington, D. C., 1969). Urbana, Ill.: National Council of Teachers of English, n.d.

Lawton, D. Social class, language and education. New York: Schocken Books, 1968.

Loban, W. Language development: Kindergarten through grade twelve (NCTE Research Report No. 18). Urbana, Ill.: National Council of Teachers of English, 1976.

McCarthy, D. The language development of the preschool child (Institute of Child Welfare Monograph Series, No. 4). Minneapolis: University of Minnesota Press, 1930.

Minnesota Scale for paternal occupations (Institute of Child Welfare). Minneapolis: University of Minnesota Press, n.d.

Moffett, J. Teaching the universe of discourse. Boston: Houghton Mifflin, 1968.

O'Hare, F. Sentence combining: Improving student writing without formal grammar instruction (NCTE Research Report No. 15). Urbana, Ill.: National Council of Teachers of English, 1973.

Piaget, J. Language and thought of a child (2nd ed.). New York: Harcourt, Brace, 1932.

Vygotsky, L. S. [Thought and language] (E. Hanfmann & G. Vakar, Eds. and Trans.). Cambridge, Mass.: M.I.T. Press, 1962. (Originally published, 1934.)

APPENDIX A

Writing about a Short Story

Through one brief incident, the following short story provides a glimpse into a relationship between husband and wife which has been developing for some time. Read the story and then write a composition in which you (1) discuss the personalities of the husband and wife and the cause of the clash, and (2) predict what the relationship of the couple will be like five years hence.

Suggestions on writing: Organize your ideas so that they will be as clear as possible. Jot down important points before you begin to write the first draft. You may write notes directly on this paper. Although this is not a timed piece of writing, you should be able to complete your composition, including any revisions, within two class periods. Suggested length of paper is 300–400 words.

BIRTHDAY PARTY[1]

Katharine Brush

They were a couple in their late thirties, and they looked unmistakably married. They sat on the banquette opposite us in a little narrow restaurant, having dinner. The man had a round, self-satisfied face, with glasses on it; the woman was fadingly pretty, in a big hat. There was nothing conspicuous about them, nothing particularly noticeable, until the end of their meal, when it suddenly became obvious that this was an Occasion—in fact, the husband's birthday, and the wife had planned a little surprise for him.

It arrived, in the form of a small but glossy birthday cake, with one pink candle burning in the center. The headwaiter brought it in and placed it before the husband, and meanwhile the violin-and-piano orchestra played "Happy Birthday to You" and the wife beamed with shy pride over her little surprise, and such few people as there were in the restaurant tried to help out with a pattering of applause. It became clear at once that help was needed, because the husband was not pleased. Instead he was hotly embarrassed, and indignant at his wife for embarrassing him.

You looked at him and you saw this and you thought, "Oh, now, don't be like that!" But he was like that, and as soon as the little cake had been deposited on the table, and the orchestra had finished the birthday piece, and the general attention had shifted from the man and the woman, I saw him say something to her under his breath—some punishing thing, quick and curt and unkind. I couldn't bear to look at the woman then, so I stared at my plate and waited for quite a long time. Not long enough, though. She was still crying when I finally glanced over there again. Crying quietly and heartbrokenly and hopelessly, all to herself, under the gay big brim of her best hat.

---

[1] Reprinted from The New Yorker by permission of Thomas S. Brush, copyright owner. Copyright 1946 The New Yorker Magazine, Inc.

APPENDIX B

Writing about a Personal Experience

Six Exploratory Questions

On this sheet of paper answer the following questions. It is not necessary to write in complete sentences. A phrase or a word will sometimes be all that is needed.

1. What event in your life before the age of ten do you remember most vividly?

2. What event after the age of ten do you remember most vividly?

3. What is the most important thing that has happened to you in the last year?

4. What situation are you currently finding most frustrating?

5. What emotion do you have the most difficulty in expressing?

6. What person, place or thing do you value most?

Task: Write about a Personal Experience.

Look over your answers to the six questions. Use them to help you choose a personal experience that you would like to write about and share with the class.

This is not a timed piece of writing. You should plan to spend about three class periods on this composition, allowing time for planning, writing, and revising.

APPENDIX C

Aluminum

Directions: Read the passage all the way through. You will notice that the sentences are short and choppy. Study the passage, and then rewrite it in a better way. You may combine sentences, change the order of words, and omit words that are repeated too many times. But try not to leave out any of the information.

Aluminum is a metal. It is abundant. It has many uses. It comes from bauxite. Bauxite is an ore. Bauxite looks like clay. Bauxite contains aluminum. It contains several other substances. Workmen extract these other substances from the bauxite. They grind the bauxite. They put it in tanks. Pressure is in the tanks. The other substances form a mass. They remove the mass. They use filters. A liquid remains. They put it through several other processes. It finally yields a chemical. The chemical is powdery. It is white. The chemical is alumina. It is a mixture. It contains aluminum. It contains oxygen. Workmen separate the aluminum from the oxygen. They use electricity. They finally produce a metal. The metal is light. It has a luster. The luster is bright. The luster is silvery. This metal comes in many forms.